

## Genetics Home Reference

*ghr.nlm.gov/handbook/basics/howmanychromosomes*

Name \_\_\_\_\_ Block \_\_\_\_\_

Go to the **Cells and DNA** section of the Handbook.

**“What is DNA?”** link?

1. Most DNA is located in the \_\_\_\_\_, while some DNA is located in the \_\_\_\_\_.
2. The four chemical bases that store DNA as a code are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
3. DNA consists of about \_\_\_\_\_ bases and more than \_\_\_\_\_% of those bases are the same in all people.
4. The \_\_\_\_\_ of these bases determines the information available for building and maintaining and \_\_\_\_\_.
5. \_\_\_\_\_
5. DNA bases \_\_\_\_\_ with each other.
6. \_\_\_\_\_ pairs with \_\_\_\_\_ and \_\_\_\_\_ pairs with \_\_\_\_\_.
7. Together, a base, sugar and phosphate are called a \_\_\_\_\_.
8. Nucleotides are arranged in two long strands that form a spiral called a \_\_\_\_\_.
9. DNA can copy or \_\_\_\_\_ itself.

**“What is a gene?”** link.

1. Genes act as instructions to make molecules called \_\_\_\_\_.
2. Genes vary in size from \_\_\_\_\_ to \_\_\_\_\_.
3. Genes are located on \_\_\_\_\_, which are located on the DNA molecule.

Go to the **How Genes Work** link in the table of contents.

**“How do genes direction the production of proteins?”** link.

1. The two major steps of protein production are \_\_\_\_\_ and \_\_\_\_\_.
2. During transcription, the information stored in a gene's DNA is transferred to a similar molecule called messenger \_\_\_\_\_.
3. Messenger RNA carries the information from the DNA out of the \_\_\_\_\_ to the \_\_\_\_\_.
4. In the cytoplasm, the \_\_\_\_\_ reads the sequence of the mRNA bases.
5. A sequence of three bases is called a \_\_\_\_\_.
6. Each codon codes for one particular \_\_\_\_\_ acid.
7. Amino acids are the building blocks of \_\_\_\_\_.
8. A type of RNA called \_\_\_\_\_ assembles the protein, one amino acid at a time.

Go back to the **Cells and DNA** link in the table of contents.

**“How many chromosomes do people have?”** link.

1. In humans, each cell contains \_\_\_\_\_ pairs of chromosomes, for a total of \_\_\_\_\_.
2. Twenty-two of these pairs, called \_\_\_\_\_ look the same in males and females.
3. The 23<sup>rd</sup> pair, or the \_\_\_\_\_ chromosomes, differ between and females.
4. Females have \_\_\_\_\_ copies of the X chromosome, while males have \_\_\_\_\_ X and \_\_\_\_\_ Y.
5. The 22 autosomes are numbered by \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_.

**How Genes Work link in table of contents.**

**“What are proteins and what do they do?” link.**

Choose two proteins from the chart and summarize their job.

Protein \_\_\_\_\_

Protein \_\_\_\_\_

**How do cells divide? Link.**

Make a Venn Diagram that shows the similarities and differences between meiosis and mitosis.

How do genes control the growth and division of cells? Link.

List three ways that genes help control the growth and division of cells.

1.

2.

3.

Go to the **Chromosomes** tab at the top of the screen.

1. Click on 5 different chromosome numbers. Write down the chromosome number, how many genes it contains, and one other cool fact about it.

Chromosome # \_\_\_\_

Chromosome # \_\_\_\_

Chromosome # \_\_\_\_

Chromosome # \_\_\_\_

Chromosome # \_\_\_\_